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Conference Abstract

From Observations to Interactions: iNaturalist and the Expanding Landscape of Biodiversity Data Sharing with DwC-DP

Carrie Seltzer‡, John Richard Wieczorek§

‡ iNaturalist, San Rafael, United States of America
§ Rauthiflor LLC, Bariloche, Argentina

Corresponding author: Carrie Seltzer (carrie@inaturalist.org)

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Abstract

iNaturalist hosts over 250 million biodiversity occurrence records representing more than 500,000 unique taxa—making it one of the largest platforms for community-contributed biodiversity data. Since 2012, iNaturalist has used the Darwin Core Archive (DwC-A, GBIF 2021) format to share its research-grade observations (occurrence records) with the Global Biodiversity Information Facility (GBIF), as well as more specialized information such as interactions with other partners such as Global Biotic Interactions (GloBI). However, there are some limitations to this format. For example, only one person is credited for the identification (there are always at least 2 people involved); interactions are captured in resourceRelationship, which is not specific to interactions; and many additional iNaturalist annotations are mapped to dynamicProperies (e.g., leaf phenology).

The presentation from which this extended abstract derives (Suppl. material 1) demonstrates how the Darwin Core Data Package (DwC-DP) offers an opportunity for more specialized and extensive data sharing than the DwC-A. This flexible and extensible format allows iNaturalist to represent not just Occurrences and their associated Media (images, sounds), but also relationships between those Occurrences,

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e.g., OrganismInteractions such as predation, pollination, parasitism, and other vital ecological connections.

As a demonstration*[1], a subset of iNaturalist data focused on plant-pollinator interactions was mapped to the DwC-DP. This example incorporates interactions via community-generated Observation Fields*[2] even though these are not currently controlled fields in the core iNaturalist data model. In Fig. 1, the relevant tables (e.g., occurrence, agent, event, media) of the DwC-DP are connected by the schemas (prepositions, e.g., conducted by, about, based on).

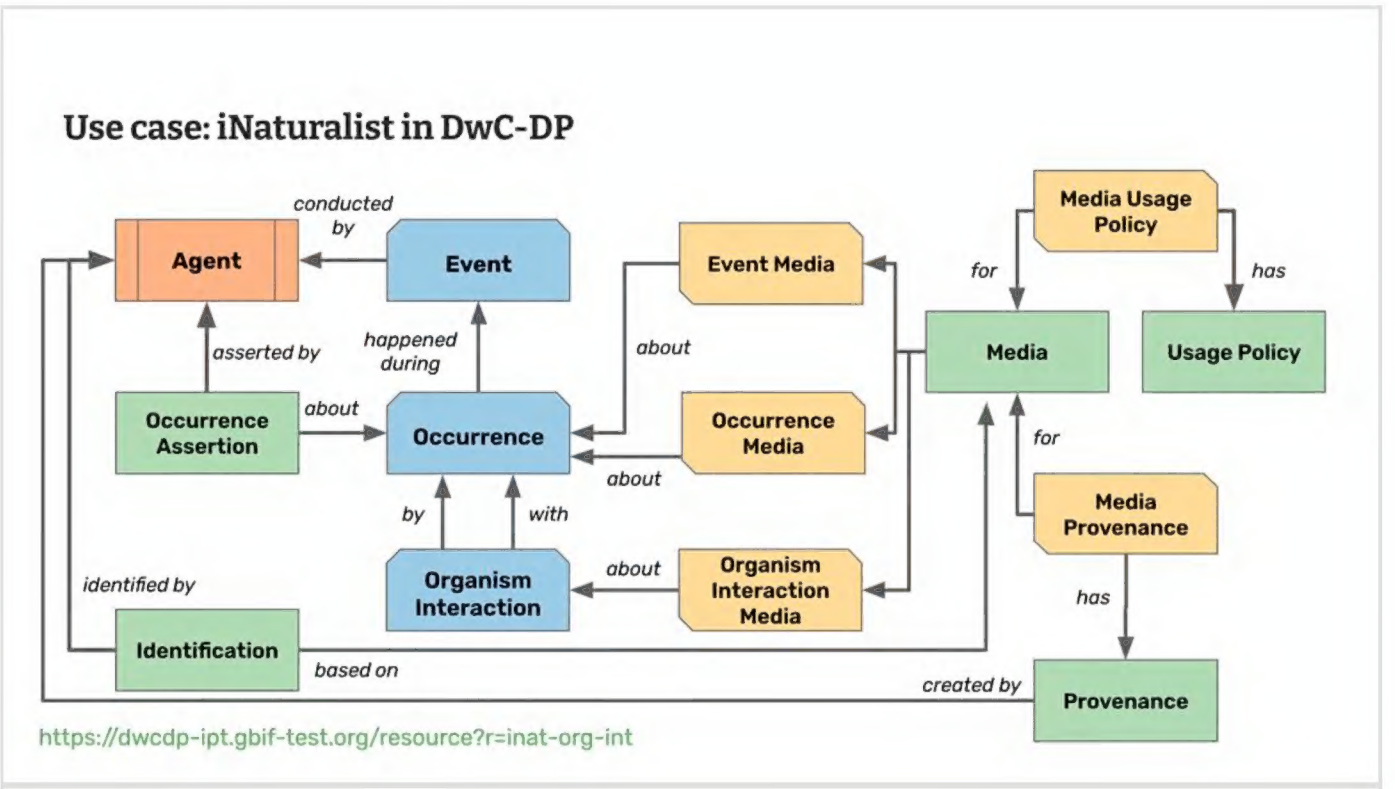

Figure 1.

iNaturalist in DwC-DP. Credit: John Wieczorek. CC0

While Occurrence remains a foundational element, DwC-DP brings structure to a richer ecosystem of data that supports both incremental improvements and novel capabilities for data providers and consumers alike. When it comes to implementing this in production for iNaturalist, many decisions will need to be made to balance the tradeoffs of use cases unmet by DwC-A, complexity, processing time, file sizes, and more.

Keywords

Darwin Core Data Package, biodiversity data, data standard, data sharing

Presenting author

Carrie Seltzer

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Author contributions

JW created the mapping. CS wrote the abstract and presentation with editing from JW.

Conflicts of interest

The authors have declared that no competing interests exist.

References

- GBIF (2021) Darwin Core Archives – How-to Guide, version 2.2. GBIF Secretariat, Copenhagen. URL: https://ipt.gbif.org/manual/en/ipt/3.0/dwca-guide

Supplementary material

Suppl. material 1: From Observations to Interactions: iNaturalist and the Expanding Landscape of Biodiversity Data Sharing with DwC-DP doi

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Endnotes

*1 https://dwcdp-ipt.gbif-test.org/resource?r=inat-org-int
*2 https://inaturalist.freshdesk.com/a/solutions/articles/151000178357?lang=en